

FIG. 1

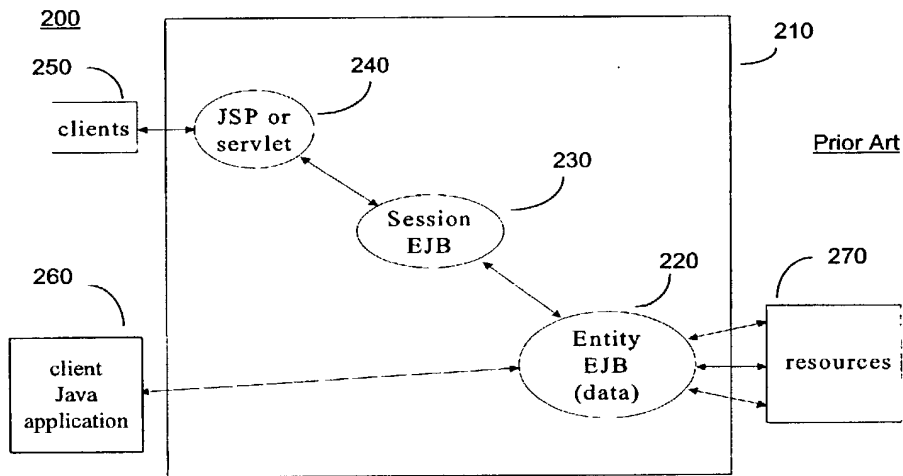


FIG. 2

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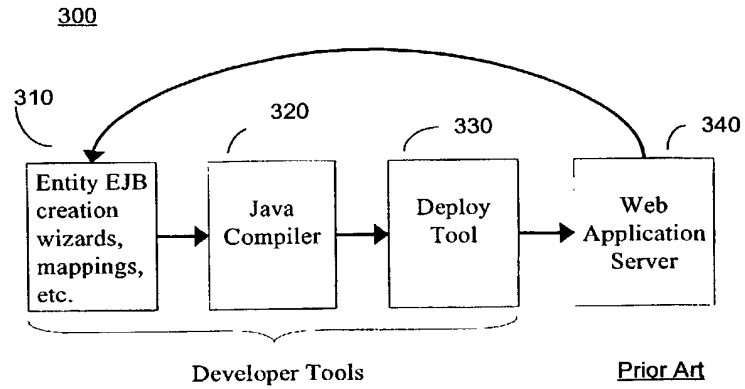


FIG. 3

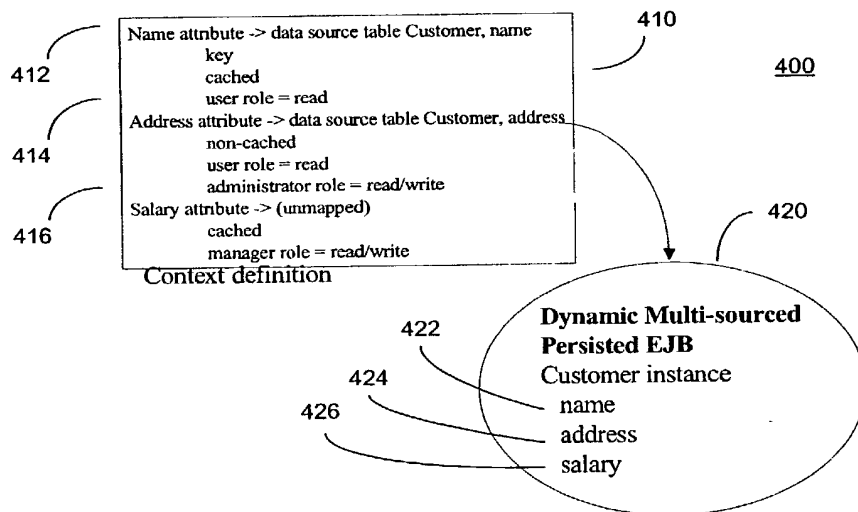


FIG. 4

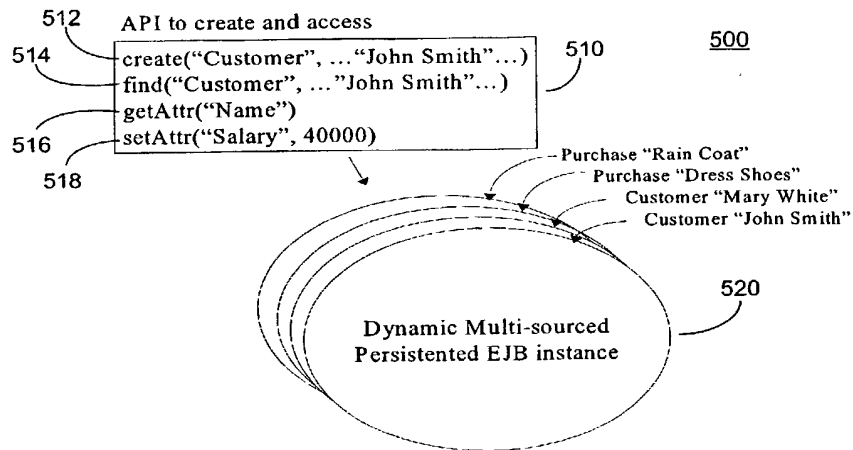


FIG. 5

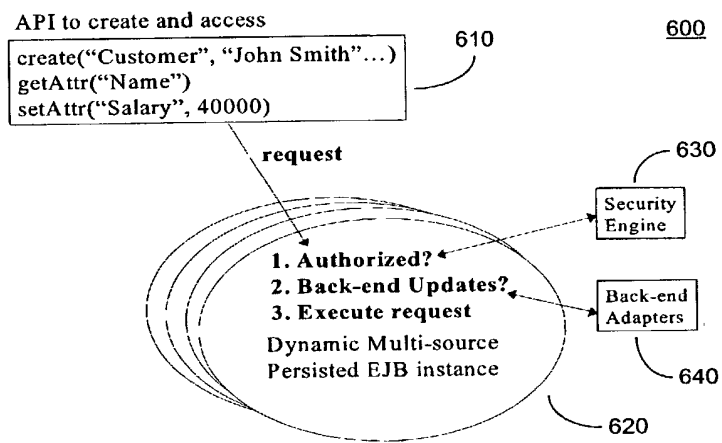


FIG. 6A

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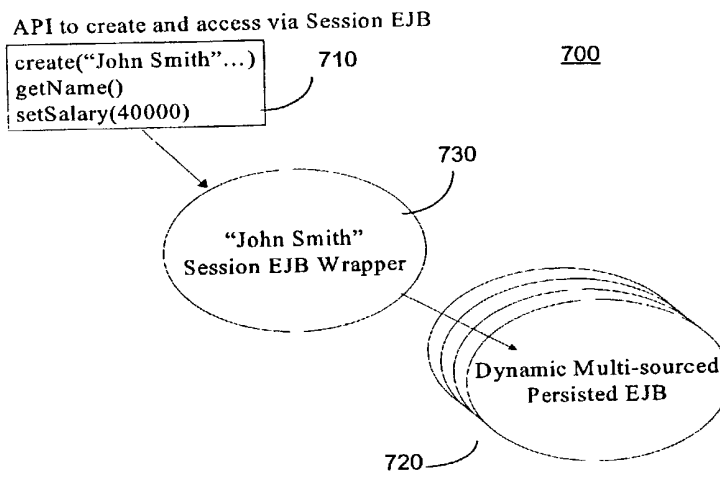


FIG. 7A

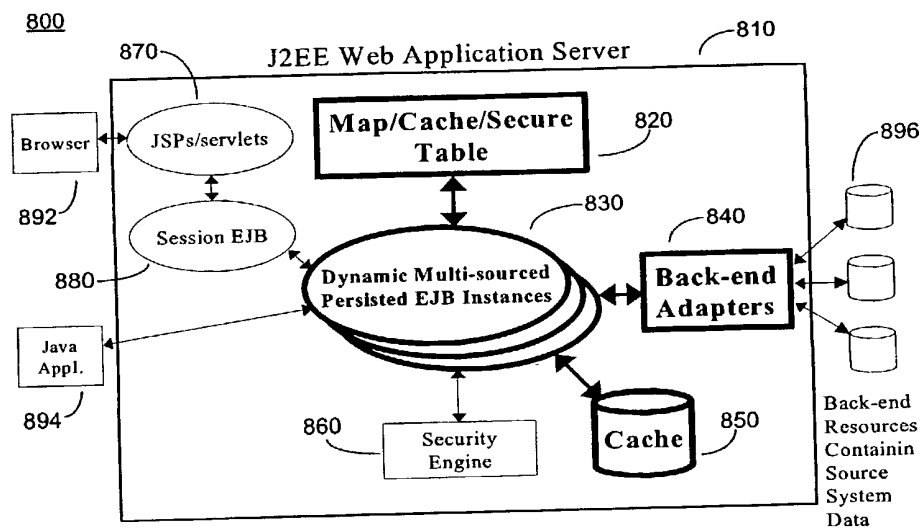


FIG. 8

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When a SessionBean invokes the `getAttr()` method on the ContextBean, the ContextBean code is as follows:

```

public Object getAttr(String attrName) throws ContextException
{
    try {
        // If client not authorized to read attribute's throw exception.
        if ( !canAccessAttribute(attrName, true) ) {
            throw new CannotReadAttributeException(...);
        }
        // If cached attribute and we have latest value then return it.
        if (attrTuple.isCacheable) {
            if (attrTuple.isCached) {
                return attrTuple.value;
            }
        }
        // Else go to backend to get value for this attribute.
        // Add it to the cache and return it to the caller.
        // Walk the tree to make sure all dependents are cached
        while ( tuple.keyName != null ) {
            keyTuple = lookupAttr( tuple.keyName );
            if ( !keyTuple.isCached )
                keysAndAttrs.addElement( keyTuple.name );
            tuple = keyTuple;
        }
        getFromBackend( keysAndAttrs.toArray() );
        if ( attrTuple.isDirty )
            return attrTuple.value;
        else
            throw new ContextException(...);
    }
}

```

FIG. 6B

Shown below is sample session bean code and how it would invoke methods on the Dynamic Entity EJB:

```
public class CustomerBean implements SessionBean, CustomerIfc
{
    ...
    public String getFirstName(ContextKey contextKey)
    {
        ...
        com.journee.context.Context context = getContext(contextKey);
        return (String)context.getAttr("firstName");
    }
}
```

FIG. 7B

```

<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE context SYSTEM "..\ContextType.dtd">
<context name="Customer">
    <adapterconfig name="Customer" initialpoolsize="0" maxpoolsize="0">
        <key attribute="id"/>
        <key attribute="billing.id"/>
        <key attribute="billing.day.id"/>
        <key attribute="billing.evening.id"/>
        <key attribute="shipping.id"/>
        <key attribute="shipping.day.id"/>
        <key attribute="shipping.evening.id"/>
    </adapterconfig>
    <attribute name="id" type="java.lang.Integer" cacheable="Y">
        <adapter name="Customer" field="id"/>
        <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    .
    <attribute name="netWorth" type="java.lang.Double" cacheable="N">
        <adapter name="Customer" field="net_worth"/>
        <role name="Everyone" security="RW"/>
    </attribute>
    <structure name="billing">
        <attribute name="id" type="java.lang.Integer" cacheable="Y">
            <adapter name="Customer" field="billing_address$id"/>
            <role name="Everyone" security="RW"/>
        </attribute>
        .
        .
        .
        <attribute name="zip" type="java.lang.String" cacheable="Y">
            <adapter name="Customer" field="billing_address$zip"/>
            <role name="Everyone" security="RW"/>
        </attribute>
        <structure name="day">
            <attribute name="id" type="java.lang.Integer" cacheable="Y">
                <adapter name="Customer" field="billing_address$day_phone$id"/>
                <role name="Everyone" security="RW"/>
            </attribute>
            .
            .
            .
            <attribute name="suffix" type="java.lang.String" cacheable="Y">
                <adapter name="Customer"
field="billing_address$day_phone$suffix"/>
                <role name="Everyone" security="RW"/>
            </attribute>
        </structure>
        <structure name="evening">
            <attribute name="id" type="java.lang.Integer" cacheable="Y">
                <adapter name="Customer"
field="billing_address$evening_phone$id"/>
                <role name="Everyone" security="RW"/>
            </attribute>
        </structure>
    </structure>

```

FIG. 9A

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```

    .
    .
    .
    <attribute name="suffix" type="java.lang.String" cacheable="Y">
      <adapter name="Customer"
field="billing_address$evening_phone$suffix"/>
      <role name="Everyone" security="RW"/>
    </attribute>
  </structure>
</structure>
<structure name="shipping">
  <attribute name="id" type="java.lang.Integer" cacheable="Y">
    <adapter name="Customer" field="shipping_address$id"/>
    <role name="Everyone" security="RW"/>
  </attribute>
  .
  .
  .
  <attribute name="zip" type="java.lang.String" cacheable="Y">
    <adapter name="Customer" field="shipping_address$zip"/>
    <role name="Everyone" security="RW"/>
  </attribute>
  <structure name="day">
    <attribute name="id" type="java.lang.Integer" cacheable="Y">
      <adapter name="Customer" field="shipping_address$day_phone$id"/>
      <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    .
    <attribute name="suffix" type="java.lang.String" cacheable="Y">
      <adapter name="Customer"
field="shipping_address$day_phone$suffix"/>
      <role name="Everyone" security="RW"/>
    </attribute>
  </structure>
  <structure name="evening">
    <attribute name="id" type="java.lang.Integer" cacheable="Y">
      <adapter name="Customer"
field="shipping_address$evening_phone$id"/>
      <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    .
    <attribute name="suffix" type="java.lang.String" cacheable="Y">
      <adapter name="Customer"
field="shipping_address$evening_phone$suffix"/>
      <role name="Everyone" security="RW"/>
    </attribute>
  </structure>
</structure>
</context>

```

FIG. 9B

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